Amendments to the Claims:

Please amend claims 1, 2, 5-14, 17-20, 28, 29, 34, and 39-41. Claims 30-33 and 35-38 were previously withdrawn from consideration. All pending claims are reproduced below, including those that remain unchanged.

1. (Currently amended) A method for shaping a surface of a workpiece, comprising:

placing the workpiece in a plasma processing chamber including a plasma torch, which is operable to control a flow of a plasma gas and a flow of a precursor into the plasma torch;

translating at least one of the workpiece and the plasma torch; and

using reactive atom plasma processing ~~to~~ that:

transfers energy from a radio frequency (RF) power source to excite the flow of the precursor in the plasma torch;

sustains a plasma discharge through collisions between the excited flow of the precursor and the plasma gas; and

shapes the surface of the workpiece with the plasma discharge from the plasma torch.

2 (Currently amended) A method according to claim 1, wherein the step of using reactive plasma processing to shape the surface of the workpiece ~~causes~~ comprises causing minimal or no damage to the workpiece underneath the surface.

3 (Original) A method according to claim 1, wherein the step of using reactive plasma processing to shape the surface of the workpiece comprises removing material from the surface of the workpiece.

4. (Original) A method according to claim 1, further comprising:

rotating the workpiece with respect to the plasma torch.

5. (Currently amended) A method according to claim 1, wherein ~~further comprising~~:

the plasma discharge is ~~creating~~ a reactive species ~~in the plasma torch~~.

6. (Currently amended) A method according to claim 1, further comprising:

placing ~~a~~ the precursor in a central channel of the plasma torch.

7. (Currently amended) A method according to claim 1, further comprising:

placing ~~a~~ the precursor in the plasma torch and creating a reactive species in the plasma torch.

8. (Currently amended) A method according to claim 1, wherein ~~further comprising~~:

the plasma gas can be an argon gas ~~placing a precursor in the plasma torch~~.

9. (Currently amended) A method according to claim 1, further comprising:

controlling the mass flow of ~~a~~ the precursor into the plasma torch.

10. (Currently amended) A method according to claim 1, further comprising:

controlling the mass flow of ~~a~~ the precursor into the plasma torch from between about 0 ml/min to about 2,000 ml/min.

11. (Currently amended) A method according to claim 1, further comprising:

controlling the mass flow of ~~a~~ the precursor into the plasma torch from between about 0 ml/min to about 50,000 ml/min.

12. (Currently amended) A method according to claim 1, further comprising:

selecting a concentration of ~~a~~ the precursor to be introduced into a central channel of the plasma torch.

13. (Currently amended) A method according to claim 1, further comprising:

introducing ~~a~~ the plasma gas through an outer tube of the plasma torch.

14. (Currently amended) A method according to claim 1, further comprising:

coupling the RF energy to the plasma discharge in an annular region of the plasma torch.

15. (Original) A method according to claim 1, further comprising:

introducing an auxiliary gas through a second of three concentric tubes in the plasma torch.

16. (Original) A method according to claim 1, further comprising:

using an auxiliary gas to keep hot plasma away from a central channel of the plasma torch.

17. (Currently amended) A method according to claim 1, further comprising:

using an auxiliary gas to adjust the position of ~~a~~ the plasma discharge.

18. (Currently amended) A method according to claim 1, further comprising:

controlling the size of ~~a~~ the plasma discharge by selecting the inner diameter of an outer tube of the plasma torch.

19. (Currently amended) A method according to claim 1, further comprising:

introducing the ~~a~~ plasma gas tangentially.

20. (Currently amended) A method according to claim 1, further comprising:

metering the precursor and/or the plasma gas flow in the plasma torch.

21. (Previously presented) A method according to claim 1, further comprising:

maintaining the temperature of the plasma torch between 5,000 and 15,000 degrees C.

22. (Original) A method according to claim 1, further comprising:

producing a volatile reaction on the surface of the workpiece.

23. (Original) A method according to claim 1, further comprising:

maintaining the processing chamber at about atmospheric pressure.

24. (Previously presented) A method according to claim 1, further comprising:

cleaning the surface of the workpiece with the plasma torch.

25. (Previously presented) A method according to claim 1, further comprising:

polishing the surface of the workpiece with the plasma torch.

26. (Previously presented) A method according to claim 1, further comprising:

planarizing the surface of the workpiece with the plasma torch.

27. (Previously presented) A method according to claim 1, further comprising:

using a plasma torch with a multiple head to increase the etch rate of the plasma torch.

28. (Currently amended) A method according to claim 1, further comprising:

using ~~a~~ the precursor ~~solution~~ to control the etch rate of the plasma torch.

29. (Currently amended) A method according to claim 1, further comprising:

using the precursor to control the etch rate of the plasma torch, the precursor being any one of a solid, liquid, and gas.

30. (Withdrawn) A method for cleaning a surface, comprising:

placing the workpiece in a plasma processing chamber including a plasma torch;

translating at least one of the workpiece and the plasma torch; and

using reactive atom plasma processing to remove material from the surface of the workpiece.

31. (Withdrawn) A tool for shaping the surface of a workpiece, the tool being able to accomplish the following steps:

positioning a workpiece in a plasma processing chamber including a plasma torch;

translating at least one of the workpiece and the plasma torch; and

using reactive atom plasma processing to shape the surface of the workpiece with the discharge from the plasma torch.

32. (Withdrawn) A tool for shaping the surface of a workpiece, comprising:

means for positioning a workpiece in a plasma processing chamber including a plasma torch;

means for translating at least one of the workpiece and the plasma torch; and

means for using reactive atom plasma processing to shape the surface of the workpiece with the discharge from the plasma torch.

33. (Withdrawn) A tool for shaping the surface of a workpiece, comprising:

a plasma torch;

a translator that can translate at least one of a workpiece and said torch; and

wherein said torch is configured to shape the surface of a workpiece using a reactive plasma process.

34. (Currently amended) A method for shaping an optic, comprising:

placing an optic workpiece in a plasma processing chamber including a plasma torch, which is operable to control a flow of a plasma gas and a flow of precursor into the plasma torch;

translating at least one of the optic workpiece and the plasma torch; and

using reactive atom plasma processing ~~to~~ that:

transfers energy from a radio frequency (RF) power source to excite the flow of the precursor in the plasma torch;

sustains a plasma discharge through collisions between the excited flow of the precursor and the plasma gas; and

shapes the surface of the optic workpiece with the discharge from the plasma torch.

35. (Withdrawn) A method for shaping a high-damage threshold optic, comprising:

placing a high-damage threshold optic workpiece in a plasma processing chamber including a plasma torch;

translating at least one of the optic workpiece and the plasma torch; and

using reactive atom plasma processing to shape the surface of the optic workpiece with the discharge from the plasma torch.

36. (Withdrawn) A method for back-etching a wafer, comprising:

placing the a wafer in a plasma processing chamber including a plasma torch;

translating at least one of the wafer and the plasma torch; and

using reactive atom plasma processing to etch a back surface of the wafer with the discharge from the plasma torch.

37. (Withdrawn) A method for thinning a wafer, comprising:

placing the a wafer in a plasma processing chamber including a plasma torch;

translating at least one of the wafer and the plasma torch; and

using reactive atom plasma processing to remove material from a surface of the wafer with the discharge from the plasma torch.

38. (Withdrawn) A method for thinning bonded wafers, comprising:

placing the bonded wafers in a plasma processing chamber including a plasma torch;

translating at least one of the bonded wafers and the plasma torch; and

using reactive atom plasma processing to remove material from an outer surface of the bonded wafers with the discharge from the plasma torch.

39. (Currently amended) A method for planarizing a surface of a workpiece, comprising:

placing the workpiece in a plasma processing chamber including a plasma torch, the plasma processing chamber at atmospheric pressure, and the plasma torch is operable to control a flow of a plasma gas and a flow of precursor into the plasma torch;

translating at least one of the workpiece and the plasma torch;

using reactive atom plasma processing ~~to~~ that:

transfers energy from a radio frequency (RF) power source to excite the flow of the precursor in the plasma torch;

sustains a plasma discharge through collisions between the excited flow of the precursor and the plasma gas; and

simultaneously removes material from the surface of the workpiece and redeposits the removed material back onto the surface of the workpiece.

40. (Currently amended) A method for shaping a surface of a workpiece at atmospheric pressure, comprising:

placing the workpiece in a plasma processing chamber including a plasma torch, the plasma processing chamber at atmospheric pressure, and the plasma torch is operable to control a flow of a plasma gas and a flow of precursor into the plasma torch;

translating at least one of the workpiece and the plasma torch; and

using reactive atom plasma processing ~~to~~ that:

transfers energy from a radio frequency (RF) power source to excite the flow of the precursor in the plasma torch;

sustains a plasma discharge through collisions between the excited flow of the precursor and the plasma gas; and

simultaneously removes material from the surface of the workpiece and redeposits the removed material back onto the surface of the workpiece in order to shape the surface of the workpiece.

41. (Currently amended) A method for shaping a surface of a workpiece, comprising:

positioning a workpiece in a plasma processing chamber including a plasma torch, which is operable to control a flow of a plasma gas and a flow of precursor into the

plasma torch;

translating at least one of the workpiece and the plasma torch; and

establishing an equilibrium in a plasma reaction in the plasma processing chamber, whereby:

a radio frequency (RF) power source may be utilized to transfer energy to excite the flow of the precursor in the plasma torch;

a plasma discharge may be sustained through collisions between the excited flow of the precursor and the plasma gas; and

material may be removed from the surface of the workpiece and redeposited on the surface of the workpiece with the discharge from the plasma torch.